Michigan Department of Community Health
Bureau of Laboratories **11/04**
Division of Chemistry and Toxicology, Trace Metals Section

Procedure for Wipe Sampling of Settled Leaded Dust

Wipe samples for settled dust can be collected from floors (both carpeted and uncarpeted), interior and sash/sill contact areas, and other reasonably smooth surfaces. Wipe media should be sufficiently durable so that it is not easily torn, but can be easily digested in the laboratory. Recovery rates of between 80-120% of the true value should be obtained for all media used for wipe sampling. Blank media should contain no more than 20 µg/wipe (MDCH=s reporting limit using Flame Atomic Absorption is 20 µg/wipe). The MDCH report will notify submitter if the identified blank is ∃20 Φg with the assayed value of the blank wipe is Φg.

1. Wipe Sampling Materials and Supplies:

   a. Type of disposable wipe: Wipe material that meets ASTM Designation: E 1792-96a may be used:

      (I) Contains low background lead levels (less than 5 µg/wipe)
      (ii) Is a single thickness
      (iii) Is durable and does not tear easily (do not use Whatman filters)
      (iv) Does not contain Aloe
      (v) Can be digested in the laboratory (tested lot# is required).
      (vi) Has been shown to yield 80-120% recovery rates from samples spiked with lead dust (not lead solution)
      (vii) Must remain moist during wipe sampling process (wipes containing alcohol may be used as long as they do not dry out)

      The recommended wipe is the individually-packaged ATriad, Benzalkonium Chloride Antiseptic Towelette@, a 11.6cm x 18.3cm wipe. This wipe may be purchased through Northern Safety Co., Inc., phone # 800-631-1246 or be furnished through the laboratory. A box of 100 costs approximately $2.75 and is made by H & P Industries, Inc., of Brookfield, WI. According to EPA 403 Final Rule (40 CFR 745.63) all wipe samples of settled dust shall be collected using a wipe that meets ASTM Designation: E 1792-96a, Standard Specification for Wipe Sampling Materials for Lead in Surface Dust. The Trace Metals Laboratory tests Triad wipe lots to meet this standard. It is important that submitters use a tested lot. Currently the lot #=s is 1H108.

      All supporting data from the tests conducted for each lot will be kept by the Trace Metals Section of the Michigan Department of Community Health for a minimum of ten years. This information is recorded in a bound notebook kept specifically for this

project. All test information is available for release to users of the wipe material upon request.

b. Non-sterilized non-powdered disposable gloves. Disposable gloves are required to prevent cross-sample contamination from hands.

c. Non-sterilized polyethylene centrifuge tubes (50 mL size) or equivalent hard-shell container that can be rinsed quantitatively in the laboratory. Many companies produce the 50 mL nonsterile centrifuge tubes. They can now be ordered guaranteed metal-free.

Example: Baxter Diagnostics Inc.
Scientific Products Division
1430 Waukegan Road
McGaw Park, IL 60085-6787
1-800-964-5227
Catalog No. C3902-15, $129.93/500 tubes

d. Dust sample collection forms: Environmental Lead Sampling Requisition, DCH-0558, March 2004. This is a form designed for intelligent character recognition for scanning capabilities.

e. Template Options

(I) Masking tape. Masking tape is used on-site to define the area to be wiped. Masking tape is required when wiping window sills and window wells in order to avoid contact with window jambs and channel edges. Masking tape on floors is used to outline the exact area to be wiped.

(ii) Hard, smooth, reusable templates made of laminated paper, metal, or plastic. Note: Periodic wipe samples should be taken from the templates to determine if the template is contaminated. Disposable templates are also permitted so long as they are not used for more than a single surface. Templates must be larger than 0.2 ft^2, but smaller than 2 ft^2. Templates are usually not used for windows due to the variability in size and shape (use masking tape instead).

f. Container labels or permanent marker.

g. Trash bag or other receptacle (do not use pockets or trash containers at the residence).

h. Measuring tape

i. Disposable shoe coverings (optional)

j. Camera & Film to document exact locations (optional)

k. Rack, bag or box to carry tubes (optional)

2. Single Surface Wipe Sampling Procedure:

a. Outline Wipe Area:

Floors: Identify the area to be wiped. Do not walk on or touch the surface to be sampled (the wipe area). Apply adhesive tape to perimeter of the wipe area to form a square or rectangle of about one square foot. No measurement is required at this time. The tape should be positioned in a straight line and corners should be nominally perpendicular. When putting down any template, do not touch the wipe area.

Window sills and other rectangular surfaces: Identify the area to be wiped. Do not touch the wipe area. Apply two strips of adhesive tape across the sill to define a wipe area at least 0.2 square foot in size (approx. 3 inches x 10 inches).

When using tape do not cross the boundary tape or floor markings, but be sure to wipe the entire sampling area. It is permissible to touch the tape with the wipe, but not the surface beyond the tape.

b. Preliminary inspection of the disposable wipes:

Inspect the wipes to determine if they are moist. If they have dried out, do not use them. According to EPA 403 Final Rule (40 CFR 745.63) all wipe samples of settled dust shall be collected using a wipe that meets ASTM Designation: E 1792-96a, Standard Specification for Wipe Sampling Materials for Lead in Surface Dust.

c. Preparation of centrifuge tubes:

Partially unscrew the cap on the centrifuge tube to be sure that it can be opened. Do not use plastic baggies to transport or temporarily hold wipe samples. The laboratory cannot measure the lead left on the interior surface of the baggie.

d. Gloves:

Don a disposable glove on one hand; use a new glove for each sample collected. If two hands are necessary to handle the sample, use two new gloves, one for each hand. It is not necessary to wipe the gloved hand before sampling. Use a new glove for each sample collected.

e. Initial placement of wipe:

Place the wipe at one corner of the surface to be wiped with wipe fully opened and flat on the surface.

f. First wipe pass - (side-to-side):

With the fingers together, grasp the wipe between the thumb and the palm. Press down firmly, but not excessively with both the palm and fingers (do not use the heel of the hand). Do not touch the surface with the thumb. If the wipe area is a square, proceed to wipe side-to-side with as many "S" like motions as are necessary to completely cover the entire wipe area. (See step h for non-square areas.) Exerting excessive pressure on the wipe will cause it to curl. Exerting too little pressure will result in poor collection of dust. Do not use only the fingertips to hold down the wipe, because there will not be complete contact with the surface and some dust may be missed. Attempt to remove all visible dust from the wipe area.

g. Second wipe pass - (top-to-bottom):

Fold the wipe in half with the contaminated side facing inward. The wipe can be straightened out by laying it on the wipe area, contaminated side up, and folding it over. Once folded, place in the top corner of the wipe area and press down firmly with the palm and fingers. Repeat wiping the area with "S"-like motions, but on the second pass, move in a top-to-bottom direction. Attempt to remove all visible dust. Do not touch the contaminated side of the wipe with the hand or fingers. Do not shake the wipe in an attempt to straighten it out, since dust may be lost during shaking.

h. Rectangular areas (e.g. window sills):

If the surface is a rectangle (such as a window sill), two side-to-side passes must be made over half of this surface, the second pass with the wipe folded so that the contaminated side faces inward. For a window sill, do not attempt to wipe the irregular edges presented by the contour of the window channel. Avoid touching other portions of the window with the wipe. If there are paint chips or gross debris in the window sill, attempt to include as much of it as possible on the wipe. If all of the material cannot be picked up with one wipe, field personnel may use second wipe at their discretion and insert it in the same container. Consult with the analytical laboratory to determine if they can perform analysis of three wipes as a single sample. Currently the MDCH lab does not perform composite analysis since our controls would not reflect the composite matrix. When performing single-surface sampling, do not use more than a single surface wipes for each container. If heavily dust-laden, a smaller area should be wiped. It is not necessary to wipe the entire

window well but do not wipe less than 0.20 ft^2 (approx. 3" x 10").

I. Packaging the Wipe:

After wiping, fold the wipe with the contaminated side facing inward again, and insert aseptically (without touching anything else) into the centrifuge tube or other hard-shelled container. If gross debris is present, such as paint chips in a window well, make every attempt to include as much of the debris as possible in the wipe.

j. Labeling the Centrifuge Tube:

Seal the tube and label with the appropriate double identifier. Record the identification number (Submitter ID#), surface and room on the Environmental Lead Sampling Requisition and mark dust wipes as the sample type (DCH-0558 March 2004).

k. Area Measurement:

After sampling, measure the surface area wiped to the nearest eighth of an inch using a tape measure or a ruler. The size of the area wiped must be a least 0.20 ft^2 in order to obtain an adequate limit of quantification (20 µg/wipe is the typical detection limit with flame AA: 20 µg/0.20 square feet = 100 $\mu g/ft^2$, which is just less than half of the HUD clearance criterion for interior window sills - 250 $\mu g/ft^2$). No more than 2 square feet should be wiped with the sample wipe or else the wipe may fall apart. Record specific measurements or square inches for each area wiped on the sampling request form. For floor sampling at least 0.5 square feet should be wiped to meet the HUD clearance level of 40 $\mu g/ft^2$.

l. Form Completion:

Fill out the Environmental Lead Sampling Requisition for Dust Wipes completely. Collect and maintain any field notes regarding type of wipe used, lot number, collection protocol, etc. Chain of custody requirements should be followed if applicable. If a blank field wipe is submitted please indicate its lot # (1H108) in the surface or room field so the final report will include that lot number.

Fees: Although the MDCH lab is non-commercial, the fee for testing environmental lead samples is $10.00 (we do not charge for the blank sample required with every site). Fee based samples will only be accepted from Counties with accredited inspectors. A check payable to the State of Michigan must be submitted with each specimen. The name of the client, or a list of clients must be submitted with the check if the name is different from the payee. Attach the check to the Environmental Lead Sampling Request. A quarterly billing for the testing services may also be arranged with the laboratory. Local public health departments are exempt from a fee

when submitting "public health" related samples. Public health related samples are environmental lead testing follow-up specimens for a lead poisoned client, or investigation of a contaminated site of public health concern.

m. Trash Disposal:

After sampling, remove the masking tape and throw it away in a trash bag. Remove the glove; put all contaminated gloves and sampling debris used for the sampling period into a trash bag. Remove the trash bag when leaving the dwelling. Do not throw away gloves or wipes inside the dwelling unit where they could be accessible to young children, resulting in a suffocation hazard.

Repeat steps a. through m. for additional samples in the same dwelling unit.

3. Blank Preparation:

After sampling the final dwelling unit of the day, but before decontamination, field blank samples should be obtained. Analysis of the field blank samples determines if the sample media is contaminated.

Blank wipes are collected by removing a wipe from the container with a new glove, shaking the wipe open, refolding as it occurs during the actual sampling procedure, and then inserting it into the centrifuge tube without touching any surface or other object. One blank wipe is collected for each dwelling unit sampled or, if more than one dwelling unit is sampled per day, one blank for every 50 field samples, whichever is less. Also, collect one blank for every lot of wipes used. Record the lot number in the surface or room field.

4. Inspector Decontamination:

After sampling, wash hands thoroughly with plenty of soap and water before getting into the car. A bathroom in the dwelling unit may be used for this purpose, with the owner's or resident's permission. If there is no running water in the dwelling unit, use wet wipes to clean the hands. During sampling, inspectors must not eat, drink, smoke or otherwise cause hand to mouth contact.

5. Quality Assurance/Quality Control:

If more than 25 μg/wipe is detected in a blank sample, the samples should be collected again since the media is contaminated. Blank correction of wipe samples is not recommended.

Any questions or problems concerning environmental lead sampling and results should be directed to:

Michigan Department of Community Health
Manager, Trace Metals Laboratory

PO Box 30035
3350 Martin Luther King Blvd.
Lansing, MI 48909
(517) 335-8244 phone, (517) 335-9776 fax

6. Lead Hazard Identification:

The U.S. Environmental Protection Agency (EPA) has completed a health-based standard for leaded dust, 40 CFR 745 Subpart D (Title IV, section 403). In accordance with Michigan administrative rules R325.9912(5), R325.9912(6) the following lead levels became effective for lead hazard control activities in the state of Michigan on March 6,2001.

Hazard Determination and Clearance Level:

40 μg/ft^2, floors (bare or covered) including enclosed porches
250 μg/ft^2, interior window sills.
400 μg/ft^2, window troughs into which the sash fits and exterior surfaces.
400 ppm, bare soil, play areas
1200 ppm, bare soil, other parts of the yard

Lead Hazard Screen:

125 μg/ft^2, interior window sills
25 μg/ft^2, floors (bare or covered) including enclosed **porches**